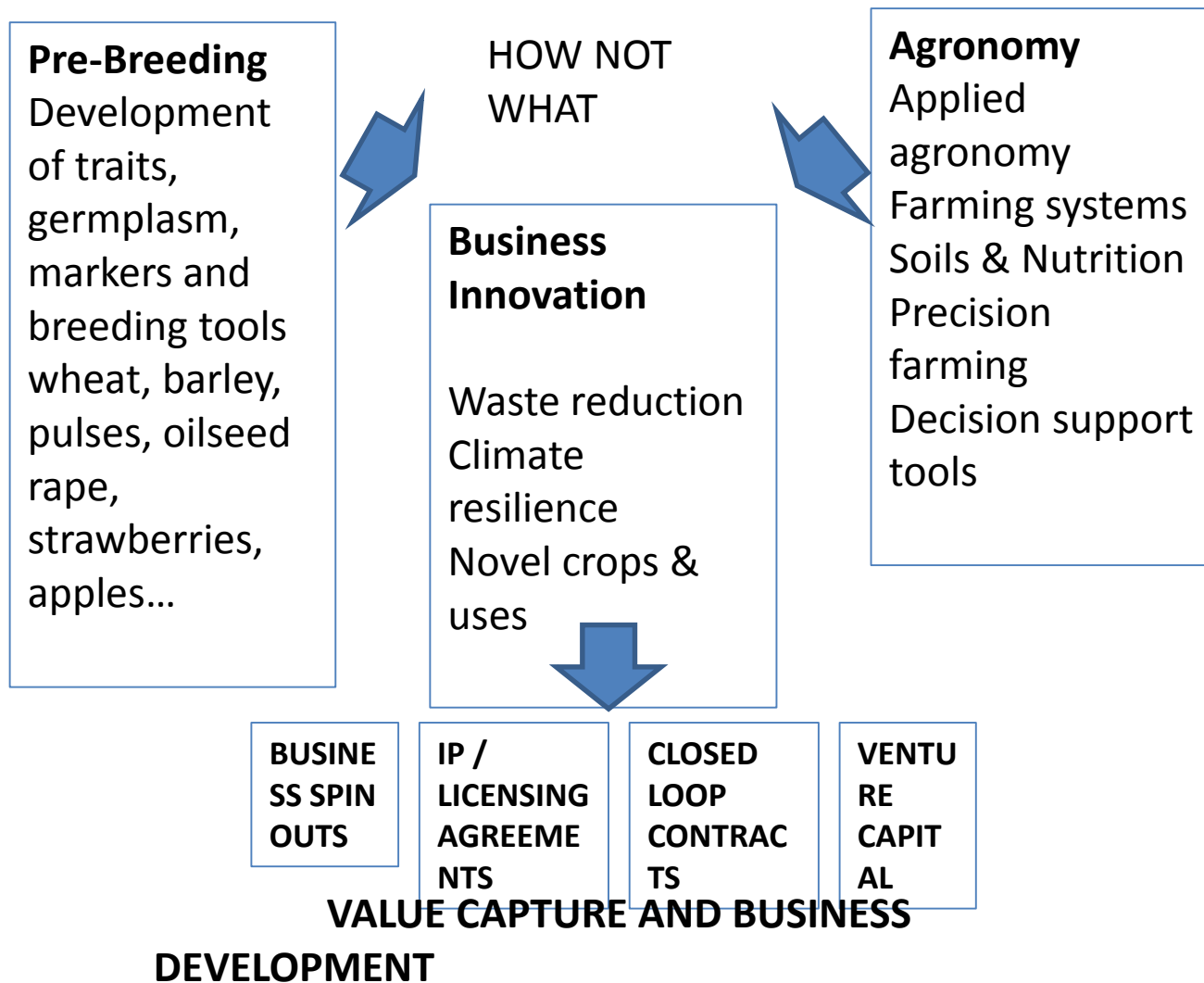


Where will technology take us?

Tina Barsby

NIAB





Founded in 1919 to improve British crops.

“Better Seeds; Better Crops”



Privatised in 1996.

2016 – all funding competitively won.

50% non-government.



National / Regional Structure



NIAB TAG MEMBERSHIP GROUPS

NORTH

- 1 Berwick
- 2 Croft-on-Tees
- 3 Bainton
- 4 Marr
- 5 Caythorpe
- 6 Aby

EAST

- 7 Essex
- 8 Suffolk
- 9 Biggleswade
- 10 Kettering
- 11 Norfolk

SOUTH

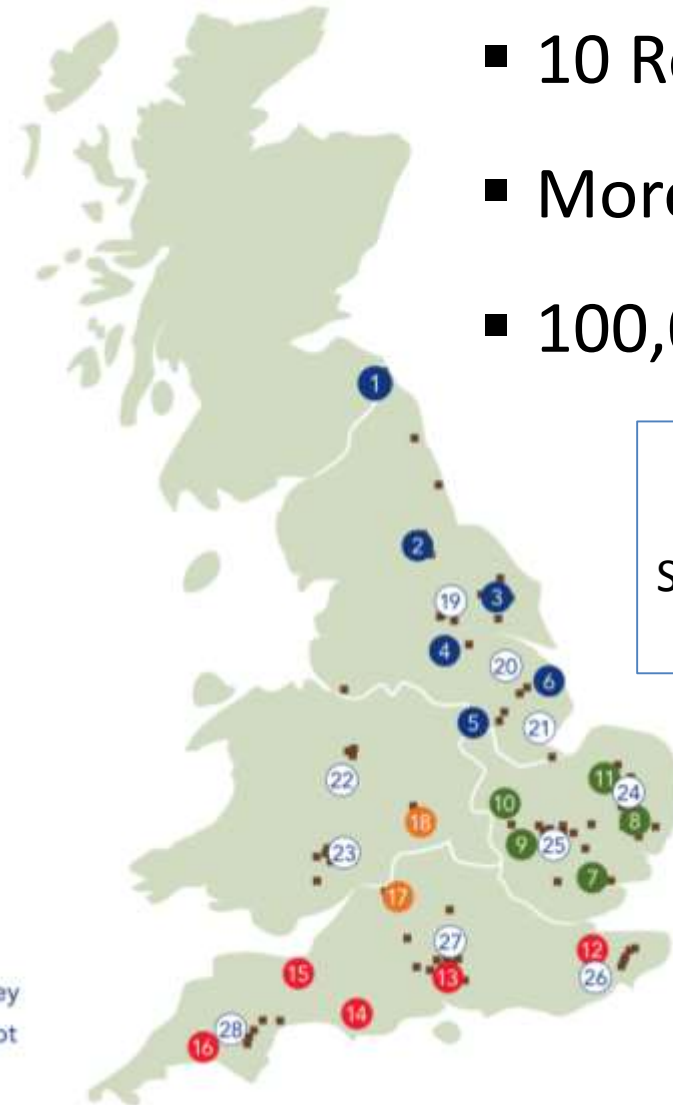
- 12 Kent
- 13 Wessex East
- 14 Wessex West
- 15 Taunton
- 16 Callington

WEST

- 17 Cirencester
- 18 Warwick

MAIN REGIONAL CENTRES

- 19 Headley Hall
- 20 Benniworth
- 21 Kirton
- 22 Shropshire
- 23 Hereford
- 24 Morley
- 25 Cambridge
- 26 East Malling
- 27 Sutton Scotney
- 28 Newton Abbot



- 10 Regional centres
- More than 100 field sites
- 100,000+ plots

> 300 staff
Scientists, Agronomists,
Specialist KT skills



NIAB is active at all points along the crop development pipeline, with effective linkages and partnerships in place to ensure technology take-up: short to mid-term (1-10 year) horizon

Translational research



Plant Variety Rights and Seeds Legislat

- Agricultural crops characterisation
- Ornamentals crops characterisation

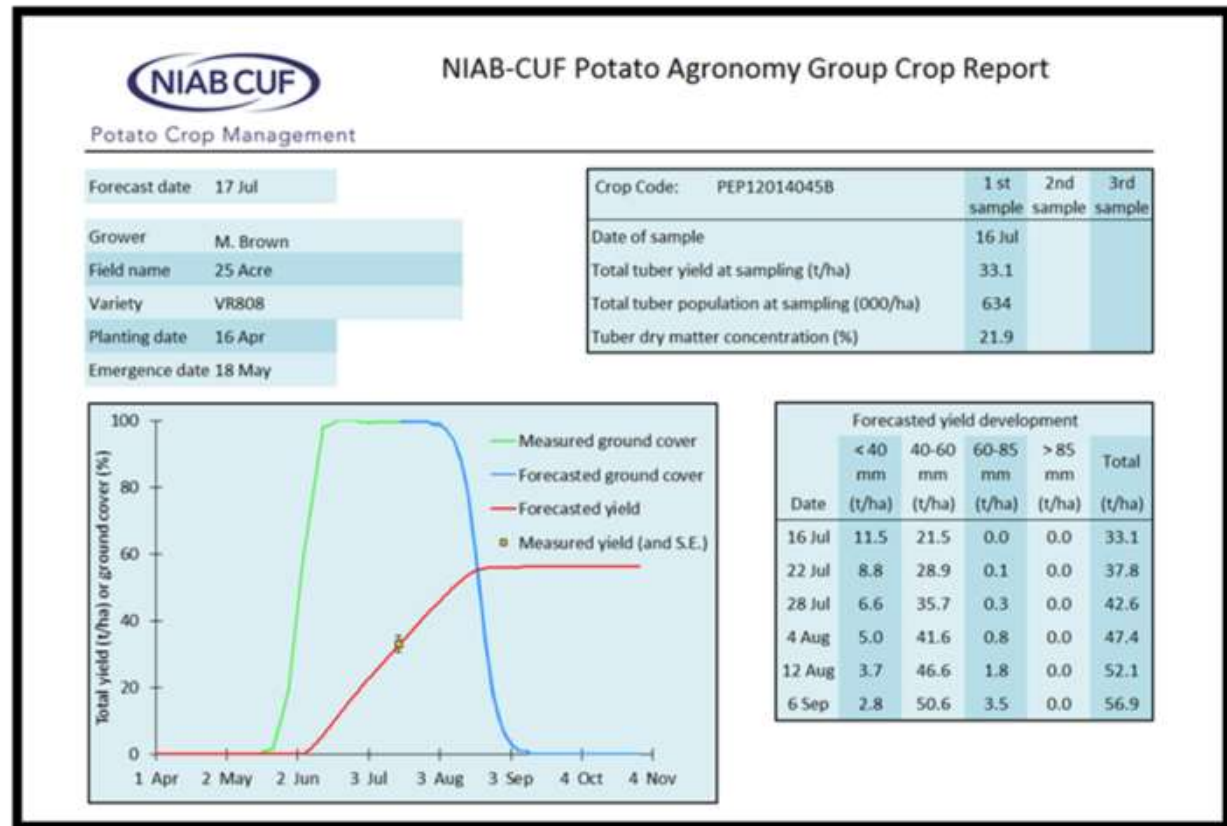


Variety testing for
Plant Breeders' Rights
Ornamentals




Crops and Agronomy





'CanopyCheck' and Yield Modelling



Oilseed Rape Flowering
Flowering Stages of OSR

Wheat Yellow Rust
Wheat Yellow Rust Disease

Submit Data Responses

Submit Data Responses



Genetics and breeding



The NIAB pre-breeding platform includes a team of commercially experienced breeders working over a range of cereal and novel crop targets, focused on increasing the genetic potential of



Wheat...

Fungus enhances crop roots and could be a future 'bio-fertiliser'



"Ancient relationship" between fungi and plant roots creates genetic expression that leads to more root growth. Common fungus could one day be used as 'bio-fertiliser', replacing mined phosphate which is now depleted to the point of impending fertiliser crisis.

Turbocharging a new Green Revolution



Wasteful, inefficient, 'relic of a bygone age' - all indictments that have been levelled at RuBisCO, the most abundant protein in nature and the heart of the reaction that feeds life on Earth. The enzyme is the powerhouse behind photosynthesis, responsible for taking CO₂ from the atmosphere and using the sun's energy to convert it into the sugars that crops need to grow.

Plant scientists in Cambridge have embarked on ambitious plans to improve crop yields by solving one of the chief limitations of photosynthesis.



We're looking ahead to at least 15-20 years from now, to transform crop production in the decades when the potential yield of current crops has been exhaustively maximised. *Dr Julian Hibberd*

Can we improve crop pollination by breeding better flowers?



There are lots of optical effects in nature that we don't yet understand... we are finding out that animals and plants have a lot more to say to the world and to each other

Beverley Glover

Latest research shows that flowers' iridescent petals, which may look plain to human eyes, are perfectly tailored to a bee's-eye-view.

Invigorating Plants



Understanding how plants 'silence' invading viruses could hold the key to releasing their hidden potential.

One of the key elements of the Green Revolution - when a series of agricultural initiatives dramatically boosted crop productivity worldwide - was the harnessing of hybrid vigour. This phenomenon occurs when the crossing of two inbred strains results in offspring with superior qualities. *Professor Sir David Baulcombe, British Professor of Botany*

It will be possible to predict precisely which parents will produce the best hybrid and to fine-tune aspects of that improvement, whether it's yield, drought tolerance or disease resistance.

Professor Sir David Baulcombe

3CS: the Cambridge Centre for Crop Science

A coalition of international expertise - based in Cambridge, dedicated to feeding the world

3CS is a partnership between Cambridge experts in Plant Sciences. They have a bold ambition to secure the world's food supply, by

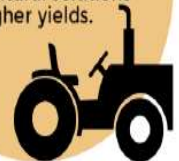
Leading research to unearth the molecular and physiological basis to developing new crops using innovative pre-breeding activities.



Training a new generation of crop science experts to ensure that we can continue to feed future global populations.



Translating these fundamental plant science discoveries into sustainable agricultural solutions for higher yields.



FUNDAMEN
TAL
SCIENCES

PRE-
BREEDI
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TRANSLAT
ION



These activities will focus on key areas of fundamental science research for yield enhancement, crop pre-breeding and sustainable agriculture and extension services...

..and will be informed by the expert contributions of Cambridge University's Department of Plant Sciences and Sainsbury Laboratory, the National Institute for Agricultural Botany. The wider UK Agritech Sector, international agencies, commercial partners and Government Departments will also play an integral role.